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AMPHOLYTE TERPOLYMERS PROVIDING SUPERIOR CONDITIONING PROPERTIES IN SHAMPOOS  
AND OTHER HAIR CARE PRODUCTS

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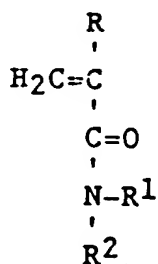
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(57) Claim

1. A composition for treating hair in which a cosmetically acceptable medium is used which contains from 0.1-10% by weight of a water soluble ampholyte terpolymer having a weight average molecular weight of from about 10 thousand to 10 million, comprising:

(a) from at least 1 to as much as 95 weight percent of the nonionic monomer acrylamide (AM) of the following formula:

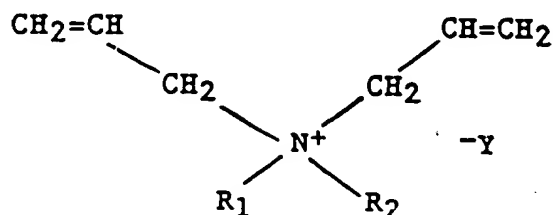


where R is H or CH<sub>3</sub>; and R<sup>1</sup> and R<sup>2</sup> are independently H, C<sub>1-4</sub>alkyl, CH<sub>2</sub>OCH<sub>3</sub>, CH<sub>2</sub>OCH<sub>2</sub>CH(CH<sub>3</sub>)<sub>2</sub>, (CH<sub>2</sub>CH<sub>2</sub>O)<sub>x</sub>-H, where x=1-50, or phenyl, or together are C<sub>3-6</sub>cycloalkyl;

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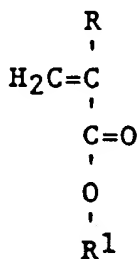
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(b) from at least 5 to as much as 80 weight percent of the cationic monomer dimethyldiallylammonium chloride (DMAAC) of the following formula:



where  $\text{R}_1$  and  $\text{R}_2$  are independently H or  $\text{C}_{1-12}$ alkyl, and the moiety  $-\text{Y}$  is a suitable anion; and

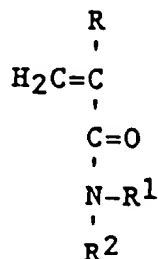
(c) from at least 1 to as much as 75 weight percent of the anionic monomer acrylic acid (AA) of the following formula:



where R is H or  $\text{CH}_3$ ; and  $\text{R}^1$  is  $\text{X}^+$ , H,  $\text{C}_{1-4}$ alkyl,  $\text{CH}_2\text{CH}_2\text{OH}$ ,  $(\text{CH}_2\text{CH}_2\text{O}-)_x\text{-H}$ , where  $x=1-50$ , or phenyl, and  $\text{X}^+$  is a suitable cation forming a salt of the carboxylic acid.

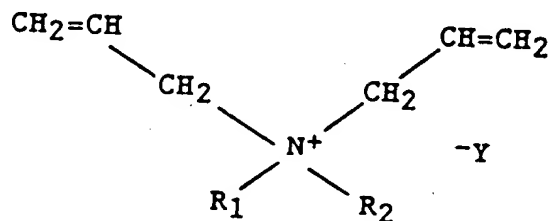
7. A method of treating hair which comprises applying to said hair a cosmetically acceptable medium containing from 0.1-10% by weight of a water soluble ampholyte terpolymer having a weight average molecular weight of from about 10 thousand to 10 million, comprising:

(a) from at least 1 to as much as 95 weight percent of the nonionic monomer acrylamide (AM) of the following formula:



where R is H or CH<sub>3</sub>; and R<sup>1</sup> and R<sup>2</sup> are independently H, C<sub>1-4</sub>alkyl, CH<sub>2</sub>OCH<sub>3</sub>, CH<sub>2</sub>OCH<sub>2</sub>CH(CH<sub>3</sub>)<sub>2</sub>, (CH<sub>2</sub>CH<sub>2</sub>O-)<sub>x</sub>-H, where x=1-50, or phenyl, or together are C<sub>3-6</sub>cycloalkyl;

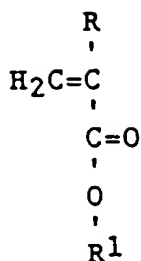
(b) from at least 5 to as much as 80 weight percent of the cationic monomer dimethyldiallylammonium chloride (DMAAC) of the following formula:



where R<sub>1</sub> and R<sub>2</sub> are independently H or C<sub>1-12</sub>alkyl, and the moiety <sup>-</sup>Y is a suitable anion; and

(c) from at least 1 to as much as 75 weight percent of the anionic monomer acrylic acid (AA) of

the following formula:



where R is H or CH<sub>3</sub>; and R<sup>1</sup> is X<sup>+</sup>, H, C<sub>1-4</sub>alkyl, CH<sub>2</sub>CH<sub>2</sub>OH, (CH<sub>2</sub>CH<sub>2</sub>O<sup>-</sup>)<sub>x</sub>-H, where x=1-50, or phenyl, and X<sup>+</sup> is a suitable cation forming a salt of the carboxylic acid.

13. A method of treating hair in conjunction with the shampooing thereof with an anionic surfactant-containing shampoo, so as to improve the conditioning thereof with respect to the properties of detangling, wet combability, wet feel, dry combability, dry feel, sheen, static flyaway control, and curl retention.

Comprising applying to said hair a composition compatible with said anionic surfactant-containing shampoo such that a clear formulation thereof is provided without the loss of said conditioning properties, wherein said composition comprises a cosmetically acceptable medium which contains from 0.1-10% by weight of an ampholyte terpolymer having a weight average molecular weight of from about 4 to 8 million, comprising (a) 25 weight percent of the nonionic monomer acrylamide (AM), (b) 50 weight percent of the cationic monomer dimethyldiallylammonium chloride (DMAAC), and (c) 25 weight percent of the anionic monomer acrylic acid

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